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EXAMINER	
WU, JIANYE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/663,866	AYYAGARI, DEEPAK	
	Examiner	**Art Unit**	
	JIANYE WU	2462	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _11 August 2009_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-4,6-9,11,13-19 and 21-23_ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-4,6-9,11,13-19 and 21-23_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Specification

Specification is objected because it recites "Transport Layer 30" in [0052] and [0053]. However, Figure 2 clearly shows that block 30 includes Link Layer (MAC) and Network Layer (the layer between Link Layer and Transport Layer). Therefore, block 30 is not a Transport Layer, because it also includes Link Layer and Network Layer.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

1. **Claim 11** is rejected under 35 U.S.C. 101 as not falling within one of the four statutory categories of invention. While the claims recite a series of steps or acts to be performed, a statutory "process" under 35 U.S.C. 101 must (1) be tied to another statutory category (such as a manufacture or machine), or (2) transform underlying subject matter (such as an article or material) to a different state or thing (Reference the May 15, 2008 memorandum issued by Deputy Commissioner for Patent Examining Policy, John J. Love, titled "Clarification of 'Processes' under 35 U.S.C. 101")

Claim 11 recites "A method of classifying data packets in a communication system, the method comprising:

analyzing ...;

..., associating ....

The terms “analyzing” and “associating” are not tied to a *particular* apparatus and are broad enough that the claim could be completely performed mentally, verbally or without a machine nor is any transformation apparent.

Note that each of independent claim 1 and 6 is tied to at least one particular apparatus “classifier” in the network system as disclosed in Specification, therefore they are of statutory process under 35 U.S.C. 101, while claim 11 is not tied to the “classifier” or any other particular apparatus.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. **Claims 1-4, 14-19** are rejected under 35 U.S.C. 103(a) as being unpatentable over W. Richard Stevens, “UNIX Netwrok Programming”, 1990, (hereinafter **Stevens**) in view of Raphaeli et al (US 20030103521, hereinafter **Raphaeli**).

For **claim 1**, Stevens discloses a method of converting application data to transport data in a communication system the method comprising:

receiving application data in a transport protocol layer from an application (data from Application layer to Transport layer, Figure 5.28, page 240) in a device (a PC, suggested by "In many PC environments", page 240) with through a service access point (a socket created by the socket System call, page 267, with description page 267-269, where the socket created by socket(int family, int *type*, int *protocol*) is an service access point), the service access point being one of a plurality of service access points of the transport protocol layer (families of socket, page 267, line 4-9 from bottom, each family provide a kind of services);

classifying the application data in the transport protocol layer as IP based (socket(int *family*, ...) with *family* being AF_INET, page 267), or non-IP based (socket(int *family*, ...) with *family* being AF_UNIX, page 267) according to the associated service access point after receiving the application data through the service access point (application data are received from the socket identified by socket descriptor, page 269, line 5 and Figure 6.1 in page 260);

determining in the transport protocol layer if a connection exists for the application data in response to the classification of the application data (the return code of function socket() gives indication if a connection exists (< 0) or not (>0), disclosed in C code sample in page 273, start with "if ((sockfd=socket(...))<0 ..." with the classification application data as parameters of socket functions);

if a connection exists for the application data, encapsulating the application data into a payload of transport messages (transfer data functions: read (), write(), recv(), send(), Figure 6.1 in page 260; which encapsulate application data into transport layer message); and

transmitting the transport messages across the communication system (send(), sendto(), page 274).

Stevens **is silent on** the communication system is a power line communication system and does not explicitly disclose a higher protocol layer is serviced through a lower protocol layer.

Raphaeli teaches a power line communication system (FIG. 1, explained in [0008]) wherein a method of converting application data to transport data (application layer, [0005]) is described. Raphaeli also discloses a higher protocol layer is serviced through a lower protocol layer (FIG. 2, where a lower layer MAC provides service for upper layers). Stevens teaches IP network at network layer 3 and above, while Raphaeli discloses a specific communication system known as the power line communication system at network layer 2. One with ordinary skill in the art would have been motivated to combine them together to provide a full network stack of the power line communication system.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Stevens with Raphaeli in order to apply IP protocol to the power line communication system and providing a higher protocol layer service through a lower protocol layer.

As to **claim 2**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further teaches the method comprising automatically establishing a connection if none exists, comprising:

generating a connection specification based upon the application data and the service access point; and establishing a connection based upon the connection specification (sample code in page 273, line 9-35, which shows to establish a connection with desired configuration parameters as the parameters socket API functions used for creating the connection) and

encapsulating the application data into transport messages for that connection (using socket API functions send(), sendto(), recv() and recvfrom(), page 274).

As to **claim 3**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further teaches wherein receiving application data from an application further comprises receiving connection-oriented application data from the application (using socket API functions recv() and recvfrom(), page 274).

As to **claim 4**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further teaches wherein receiving application data further comprises:

receiving connectionless application data from the application (setting up a connectionless connection via socket() with *family* parameter being set as SOCK_DGRAM, and protocol being set UDP, then using system calls recv() and recvfrom(), page 274); and encapsulating the connectionless application messages into transport data for a power line communication system connection (using socket API functions send(), sendto(), recv() and recvfrom(), page 274); wherein the power line

communication system is connection-oriented (at MAC layer the power system is connection-oriented, as disclosed by Raphaeli in claim 1).

As to **claim 14**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further discloses the method comprising:

Accessing a classification table (the table containing all values of 5-tupe, page 269, line 4-10) for a encapsulating of the service access point to a connection identifier (5-tupe, page 269, line 4-10, which identify a service access point); and

providing a connection associated with the connection identifier as the connection (the connection associated with the socket, as explained in claim 1).

As to **claim 15**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further discloses the method comprising:

Accessing a classification table (the table in Figure 6.7, page 268 containing values for a set of parameter "5-tupe", page 269, line 4-10) for a mapping of the service access point and at least one of an IP address, a port number, and a type of service field to the connection identifier (5-tupe, page 269, line 4-10, which includes the IP addresses and port numbers of both local and remote nodes, used as an identifier pf connection); and

Providing a connection associated with the connection identifier as the connection (the connection associated with the socket explained in claim 1).

As to **claim 16**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further discloses the method comprising:

Accessing a classification table (the table in Figure 6.7, page 268 containing values for a set of parameter "5-tupe", page 269, line 4-10) for a mapping of the service access point, an IP address to a connection identifier, a port number to the connection identifier (5-tupe, line 4-10, which includes the IP addresses and port numbers of both local and remote nodes).

Providing a connection associated with the connection identifier as the connection (the connection associated with the socket explained in claim 1).

As to **claim 17**, Stevens and Raphaeli in combination disclose the method of claim 1, Stevens further discloses the method comprising:

Comparing the application data with at least one classifier rule for a match (comparing values of 5-tupe, page 269, line 4-10 with the configured set); and

Providing a connection associated with a matching classifier rule as the connection (the connection associated with the socket explained in claim 1).

As to **claim 18**, Stevens and Raphaeli in combination disclose the method of claim 17, Stevens further discloses the method comprising:

Comparing the application data only with classifier rule associated with the service access point (comparing the 5-tupe at the receiving end socket, page 269, line 4-10).

4. **Claim 19 is** rejected under 35 U.S.C. 103(a) as being unpatentable over Stevens in view of Raphaeli, further in view of Andrew S. Tanenbaum, "Computer Networks", Forth edition, 8/9/2002 (hereinafter **Tanenbaum**).

As to **claim 19**, Stevens and Raphaeli in combination disclose the method of claim 17, comparing the application data only at least one destination address within the at least one classifier rule (comparing the destination address within the 5-tupe at the receiving end socket, page 269, line 4-10).

Stevens and Raphaeli do not explicitly disclose that application data that is audio/visual application data.

In the same field of endeavor, Tanenbaum discloses the application data include audio/visual application data (suggested by "how computer process audio and video", Section 7.4, last paragraph).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to apply the teachings by Stevens with Raphaeli to audio/visual application data disclosed by Tanenbaum in order to provide broad services.

5. **Claims 6-7, 9** and **21-23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrew S. Tanenbaum, "Computer Networks", Forth edition, 8/9/2002 (hereinafter **Tanenbaum**) in view of Stevens, further in view of Kurupati et al. (US 20030182291, hereinafter Kurupati).

For **Claim 6**, Tanenbaum discloses a method of transmitting data on a network, the method comprising:

receiving an incoming data packet from an application on a device at one of a plurality of service access points of a first protocol layer (TSAP, Figure 6-8; or Lines 1-2 of first paragraph of Section 6.2.1, where a service access point of a protocol layer TSAP is considered as one of a plurality of sockets);

associating the packet with a connection (Fig. 6-8, the packet entering TSAP is associated with the connection indicated by dot line);

routing the packet to the connection ("routing packets", Lines 1-3 of first paragraph of Section 5.2) established at an interface between the first protocol layer and a second protocol layer, wherein the second protocol layer is a lower level protocol layer (Fig. 6-8, where first protocol layer is Transport layer of Host 1, and second protocol layer is Network layer of Host 2);

Tanenbaum does not explicitly discloses classifying the data packet in the first protocol layer in a classifier associated with the service access point, including: determining an order of rules associated with the classifier to apply to the data packet using a priority of each of the rules, where each rule includes the corresponding priority; applying the rules to the data packet to the order, including when applying a particular rule to the data packet: for each classification parameter of the rule, comparing a field of the data packet identified by a parameter ID of the classification parameter with a value of the classification parameter; and if for each classification parameter of the rule, a matching value is found in the data packet, causing the packet to be associated with a connection associated with the rule.

in the same field of endeavor, Stevens discloses classifying the data packet in the first protocol layer in a classifier (parameters family, type, protocol of the socket function, page 267) associated with the service access point, including: determining an order of rules associated with the classifier to apply to the data packet using a priority of each of the rules, where each rule includes the corresponding priority (rules specified in

Figure 6.7, page 268, each rule includes a corresponding priority; e.g., SOCK_STEAM normally has a higher priority than SOCK_DGRAM); applying the rules to the data packet to the order, including when applying a particular rule to the data packet (function socket(), page 267, which implements rules according to parameters of the function): for each classification parameter of the rule, comparing a field of the data packet identified by a parameter ID of the classification parameter with a value of the classification parameter; and if for each classification parameter of the rule, a matching value is found in the data packet, causing the packet to be associated with a connection associated with the rule (parameters and associated rules specified in Figure 6.7, page 268 for function socket to implement on the packet with associated connection).

Stevens simply teaches details of the socket that is disclosed by Tanenbaum, therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine modify socket by Tanenbaum with the detailed socket features disclosed by Stevens to provide desired network service.

Tanenbaum in view of Stevens does not explicitly disclose using priority of each of the rules.

Kurupati discloses each of the rules is associated with priority ("A rule is typically associated with each IP address ... The rule associated with an IP address indicates what action--e.g., a routing decision, a network address translation, a **priority** determination, and/or a filtering function--is to be taken with respect to a packet having that IP address", [0017]).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combined Tanenbaum in view of Stevens with Kurupati to use the rules associated with priority to more ensure data being delivered following priority.

As to **claim 7**, Tanenbaum and Stevens and Kurupati in combination disclose the method of claim 6, Tanenbaum further teaches the method comprising fragmenting the packet into smaller packets as needed based upon the packet size ("maximum packet size, ... break it into 4 packets", Section 5.1.3).

As to **claim 9**, Tanenbaum and Stevens and Kurupati in combination disclose the method of claim 6, Tanenbaum teaches classifying the data packet further comprising determining if a connection exists for the packet, and requesting a connection if a connection does not exist (Section 6.1.4, the server code section of /* Passive open, Wait for connection. */, wherein [s=socket(...), if (s<0) fatal(socket failed) ...] suggest that if the value of s < 0, the socket exists already; otherwise, it successfully creates a socket for a new connection).

As to **claim 21**, Tanenbaum in view of Stevens and Kurupati discloses the method of claim 6, Tanenbaum further discloses the method comprising; a connection identifier (socket parameter *type*, Section 6.1.3, which is a part of connection identifier of socket, has the value of SOCK_STREAM, SOCK_DGRAM, SOCK_RAW and etc, with SOCK_STREAM has the highest priority, page 268, line 7-13, Steven); a transport layer port (each transport layer port represents an application, for example, a TCP port 23 for telnet has a higher priority than a TCP port 25 for SMTP used by e-mail, Section

8.6.2 and 7.4.4 of Tanenbaum); and at least one classification parameter, each classification parameter including a parameter ID and a value (IP destination address and IP destination Port; Section 6.5.4; this is the same as disclosed in the specification in [0062]).

As to **claim 22**, Tanenbaum in view of Stevens and Kurupati discloses the method of claim 21, Tanenbaum further discloses each rule associated with audio/visual application data (suggested by “how computer process audio and video”, Section 7.4, last paragraph), the rule includes only one classification parameter (the IP address of a customer’s house for "a video on demand system” shown in Figure 7-78, Section 7.4.8).

As to **claim 23**, Tanenbaum in view of Stevens and Kurupati discloses the method of claim 22, Tanenbaum further discloses each rule associated with audio/visual application data (Figure 7-78, Video-on-demand system), the classification parameter of the rule includes a destination address as the parameter ID (the IP address of a customer’s house for "a video on demand system” shown in Figure 7-78, Section 7.4.8).

6. **Claims 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over S. Tanenbaum in view Stevens and Kurupati, further in view of Malkin (US 6272145 B1).

As to **claim 8**, Tanenbaum in view Stevens and Kurupati discloses the method of claim 6, the method comprising fragmenting the packet into smaller packets as needed (“maximum packet size, ... break it into 4 packets”, Section 5.1.3).

Tanenbaum **does not** explicitly teach that the fragmenting depends upon the bandwidth of the connection.

In the same field of endeavor, Malkin discloses the fragmenting depends upon the bandwidth of the connection ("size of the different fragment will vary depending on … bandwidth of each link", col. 7, line 26-28).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to fragmenting depends upon the bandwidth of the connection for the benefit of efficiency and quality of service enhancement of network operation.

7. **Claims 11** and **13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevens in view of Hogan et al. (US Patent 4,841,456, hereinafter Hogan).

For **Claim 11**, Stevens discloses a method of classifying data packets in a communication system, the method comprising:

analyzing an incoming data packet according to a plurality of sets of parameters (sets of socket parameters, such as *family, type*, *protocol*, and etc, Page 267, different types of socket has different types of parameters), wherein the sets of parameters analyzed depends upon a type of service access point (socket *type* of socket system call, Page 267) from which the data packet came, and the sets of parameters are used in analyzing the data packet according to an order of the priorities of the sets of parameters (such as parameters *family*, *type* and *protocol,* Page 267-268; or 5-tuple parameters of socket system call, page 269, line 8-9); if the set of parameters in the data packet match a predefined set of parameters associated with connection, associating a connection (a connection is identified by socket descriptor, page 269, line 5) for the predefined set of parameters with the packet (5-tuple parameters of socket system call, page 269, line 8-9).

Steven does not explicitly disclose each set of parameters includes a priority;

Hogan discloses apply priority of to each of the rules ("A typical priority rule might be that the rule having the highest number of conditions (i.e., a specific rule) has priority over a rule having a smaller number of conditions", col. 8, line 28-31). The Hogan's teaching is very general and applies to any set of rules.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine Stevens with Hogan in order to apply socket API to Internet ([0016]).

As to **claim 13**, Stevens in view of Hogan discloses the method of claim 11, Stevens further discloses that the method comprising transmitting parameters of the data packet to a connection manager if the parameters of the data packet do not match a predefined set of parameters (page 283, line 5-6, if (sendto(sockfd, mesg, n, 0, pcli_addr, clilen) !=n) err_dump("dg_echo: sendto error"); where the connection manager is the Operating System, the n bytes of data to be sent to specified socketfd and pcli_addr must match with the number of data byte sent).

Response to Amendments/Arguments

8. Applicant's arguments filed on 8/11/2009 have been fully considered and they are not persuasive.

9. For **claim 1**, Applicant argues:

a) "the claims are not limited to only the OSI model" (3rd paragraph from bottom of page 8);

b) "Stevens addresses the interface to a protocol layer. It does not address the internal operation of the protocol layer" (1^{st} full paragraph of page 9);

In response, Examiner respectfully disagrees:

a) OSI model is the fundamental in understanding data communication. Transport layer is defined by OSI model (or Internet 5 layer model; but the definition of transport layer is the same in both model). Therefore, anything inconsistent with OSI (and the like) model may cause confusion to one with the ordinary skilled in the art;

b) Stevens does address the internal operation of the protocol layer through the functions, such as those defined in Figure 6.1, page 260, as cited in the Office Action.

10. For **claim 6**, Applicant argues: "Claim 6, as amended, recites "determining an order of rules associated with the classifier to apply to the data packet using a priority of each of the rules, where each rule includes the corresponding priority." That is, each rule includes the priority." (2^{nd} paragraph from bottom of page 9);

In response, Tanenbaum in view of Steven and Kurupati discloses the amended claim 6, as shown in this Office Action.

11. For **claim 22**, Applicant argues: "The Examiner cited the IP address of a customer's house as one parameter. Office Action, p. 14. However, the Examiner fails to identify how the IP address is the only parameter. That is, if there is another parameter, such as a source address, TCP options, or the like, then there is not only one parameter." (2^{nd} paragraph from bottom of page 10);

In response, IP address is one parameter, it does include other parameter such as TCP options or the like. In fact Specification discloses the IP address is a parameter ([0026], "A rule would be defined for the destination IP address").

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jianye Wu whose telephone number is (571)270-1665. The examiner can normally be reached on Monday to Thursday, 8am to 7pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on (571)272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jianye Wu/

Examiner, Art Unit 2462